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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/804,584	03/16/2004	Theodore Zhu	MICRON.225C1	7269

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EXAMINER

HUR, JUNG H

ART UNIT	PAPER NUMBER
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2824

DATE MAILED: 11/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/804,584

Applicant(s)

ZHU ET AL.

Examiner

Jung (John) Hur

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 3/16/04 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 6/25/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☒ Other: search history.

DETAILED ACTION

Preliminary Amendment

1. Acknowledgment is made of applicant's Preliminary Amendment, filed 25 June 2004.

The changes and remarks disclosed therein were considered.

Claims 21-30 have been added. Therefore, claims 1-30 are pending in the application.

Specification

2. The disclosure is objected to because of the following informalities:

In paragraph [0001], the status of the parent application No. 10/068,465 should be updated; namely, said application has matured into U.S. Pat. No. 6,735,112.

Appropriate correction is required.

3. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

The abstract of the disclosure is objected to because it uses the phrase "is disclosed" which can be implied. It is suggested that "memory comprising" be replaced with --memory comprises--, and that "is disclosed," be deleted.

Correction is required. See MPEP § 608.01(b).

Double Patenting - Non-Statutory

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. Claims 1-17 and 19-21 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-15 of U.S. Patent No. 6,735,112 ("Patent"). Although the conflicting claims are not identical, they are not patentably distinct from each other.

Regarding claims 1-12 of the instant application, Patent claims 1-11 of Patent anticipate the magneto-resistive memory cell as recited in claims 1-12 of the instant application, since each of claims 1 and 2 of instant application is broader in scope than Patent claim 1. However, Patent claims 1-11 do not claim an integrated circuit comprising such magneto-resistive memory cell. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the magneto-resistive memory cell of Patent claims 1-11 in an integrated circuit, since integrated circuits comprising magneto-resistive memory cells were common and well known in the art.

Regarding claims 13-17 of the instant application, Patent claims 12-15 anticipate the method of constructing a magneto-resistive memory cell as recited in claims 13-17 of the instant application, since claim 13 of the instant application is broader in scope than Patent claim 12. However, Patent claims 12-15 do not claim a method of constructing such magneto-resistive memory cell in an integrated circuit. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the method of Patent claims 12-15 into a method of forming an integrated circuit, since it was common and well known in the art to construct magneto-resistive memory cells in an integrated circuit.

Regarding claims 19-21 of the instant application, Patent claims 1-2 anticipate the magneto-resistive memory cell as recited in claims 19-21 of the instant application, since each of claims 19 and 20 of instant application is broader in scope than Patent claim 1. However, Patent claim 2 does not claim that the first and second magnitudes are minimum magnitudes, as claimed in claim 21 of the instant application. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to include the minimum magnitudes for the first and second magnitudes of Patent claim 2, since it is desirable for all levels of magnitudes for the applied magnetic fields for switching to be in the optimum range, as claimed in Patent claim 2.

6. Claims 18 and 22-30 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 2, 8 and 9 of U.S. Patent No. 6,735,112 ("Patent") in view of Heim et al. (U.S. Pat. No. 5,465,185).

Regarding claims 18 and 22-30 of the instant application, Patent claims 2-4 and 8-10 anticipate the magneto-resistive memory cell as recited in claims 18 and 22-30 of instant

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application, since Patent claim 2 is broader in scope than claim 18. However, said Patent claims do not claim: a memory device comprising such magneto-resistive memory cell; that the separating layer is 7-9 angstroms thick; that the cell is located at an intersection of at least two conductors; a specific material for the pinned and the additional pinned magnetic layers; a specific antiferromagnetic material; and a specific material for the free magnetic layer.

Heim, for example in Fig. 5, discloses a separating layer (ruthenium) of approximately 3-6 angstroms or less than 10 angstroms (column 6, lines 35-41); an antiferromagnetic material (for 66) of iron-manganese (column 4, lines 35-40); a pinned (72) and an additional pinned (74) layers of nickel-iron (column 5, lines 48-61); and a free magnetic layer (63) of nickel-iron (column 5, lines 3-35).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the magneto-resistive memory cell of Patent claims 2-4 and 8-10 in a memory device and to locate the cell at an intersection of at least two conductors, since a memory device comprising magneto-resistive memory cells and locating the cells at intersections of at least two conductors were common and well known in the art. Further, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to select a separating layers thickness of 7-9 angstroms (as in Heim), since determining an optimum value or range of a result effective variable involves only routine skill in the art. In addition, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to select iron-manganese for the antiferromagnetic material and nickel-iron for the pinned, additional pinned and free magnetic layers (as in Heim), since such materials for antiferromagnetic, free and pinned layers were common and well known in the art.

Conclusion

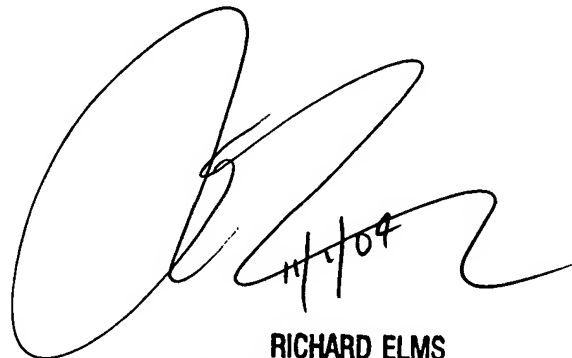
7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jung (John) Hur whose telephone number is (571) 272-1870.

The examiner can normally be reached on M-F 6:30 AM - 3:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Elms can be reached on (571) 272-1869. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

jhh

A handwritten signature in black ink, appearing to be 'Richard Elms', with a date '11/1/04' written below it.

RICHARD ELMS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800